

Física Semanal 7

① $r = 6400 \text{ km}$ $n = 1$ $t = 24 \text{ h}$

$$v = \omega \cdot r$$

$$\omega = \frac{2\pi \text{ rad}}{T}$$

$$\omega = \frac{2\pi \cdot 0.5}{24 \text{ hr}} = \omega$$

$$\omega = 0.262 \text{ rad/hr}$$

$$v = 0.262 \text{ rad/hr} \times 6400 \text{ km}$$

$$v = 1676.8 \text{ km/hr}$$

② $n = 1$ $t = 86400$ $\theta = 360$

$$\omega = \frac{2\pi \text{ rad}}{T}$$

$$T = \frac{t}{n}$$

$$T = \frac{86400}{1}$$

$$T = 86400$$

$$\omega = \frac{6.28}{86400}$$

$$\omega = 0.0000726852$$

③ $v = 90 \text{ km/h}$
 $= 24 \text{ m/s}$ $r = 0.7 \text{ m}$ $\omega = ?$

$$v = \omega * r$$

$$\frac{v}{r} = \omega$$

$$\omega = \frac{24 \text{ m/s}}{0.7 \text{ m}}$$

$$\omega = 35.71 \text{ rad/s.}$$

④ $n = 2000 \text{ rev/min}$ $t = 1 \text{ min}$
 $= 60 \text{ seg}$ $\theta = 720,000$

$$T = \frac{t}{n}$$

$$T = \frac{60 \text{ seg}}{2000 \text{ rev/min}}$$

$$T = 0.03$$

$$\omega = \frac{\theta}{t}$$

$$\omega = \frac{720,000}{60 \text{ seg}}$$

$$\omega = 12,000 \text{ grados/seg}$$

5) $r = 1.5$ $n = 120$ $t = 60 \text{ seg}$

a) $T = \frac{t}{n}$

$$T = \frac{60 \text{ seg}}{120}$$

$$T = 0.5 \text{ seg}$$

b) $N = \frac{1}{T}$

$$N = \frac{1}{0.5}$$

$$N = 2 \text{ Hz}$$

c) $\omega = 2(3.1416)$

$$\omega = \frac{6.28}{0.5}$$

$$\omega = 12.57 \text{ rad/seg}$$

d) $V_t = \frac{2\pi(\text{radio})}{T}$

$$V_t = \frac{6.28}{1.5}$$

$$V_t = \frac{9.42}{0.5}$$

$$V_t = 18.84 \text{ mt/seg}$$

e) $A_c = \frac{V_t^2}{r}$

$$A_c = \frac{(18.84 \text{ m/s})^2}{1.5} = 236.63$$

$$A_c = 236.63 \text{ m/s}^2$$

⑥ $r = 1.2 \text{ m}$ $\omega = 35.4 \text{ rad/s}$

$$v_t = \omega r$$

$$v_t = 35.4 \text{ rad/s} \times 1.2 \text{ m}$$

$$v_t = 42.48 \text{ m/s}$$

$$A_c = \frac{v_t^2}{r}$$

$$A_c = \frac{(42.48 \text{ m/s})^2}{1.2} = 1,503.8$$

$$A_c = 1,503.8 \text{ s}^{-2}$$

7) $\omega = 2 \text{ rad}$ $t = 0.25$ $r = 30 \text{ cm}$
 $= 0.3 \text{ m}$

$$\omega = \frac{\theta}{t}$$

$$\omega = \frac{2 \text{ rad}}{0.25 \text{ sec}}$$

$$\omega = 8 \text{ rad / sec}$$

$$v_t = \omega r$$

$$v_t = 8 \text{ rad / sec} \times 0.3 \text{ m}$$

$$v_t = 2.4 \text{ rad. m / s}$$

$$T = \frac{t}{n}$$

$$T = \frac{2 \text{ rad}}{2\pi \text{ rad}}$$

$$T = 0.31 \text{ rad}$$

$$N = \frac{n}{t}$$

$$N = \frac{0.31}{0.25 \text{ sec}}$$

$$N = 1.24 \text{ rad / sec}$$

$$\textcircled{9} \quad r = 0.5 \text{ cm} \quad n = 400 \text{ min} \quad t = 5 \text{ min}$$

$$300 \text{ seg}$$

$$N = \frac{400 \text{ rev}}{300 \text{ s}}$$

$$N = 4/3 \text{ Hz}$$

$$T = \frac{1}{N}$$

$$T = \frac{1}{\frac{4}{3} \text{ Hz}}$$

$$T = \frac{3 \text{ s}}{4}$$

$$T = 0.75 \text{ s}$$

$$\omega = \frac{2\pi}{T}$$

$$\omega = \frac{2(3.1416)}{0.75 \text{ s}}$$

$$\omega = 8.373 \text{ rad/s}$$

$$v_t = \omega r$$

$$v_t = 8.373 \text{ rad/s} * 0.5 \text{ m}$$

$$v_t = 4.187 \text{ m/s}$$

$$a_c = \frac{v_t^2}{r} = \frac{(4.187 \text{ m/s})^2}{0.5 \text{ cm}}$$

$$a_c = 35,061,938 \text{ m/s}^2$$